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TREATING AEROPHAGIA WITH CONTINGENT PHYSICAL GUIDANCE

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Contingent physical guidance was used to treat chronic aerophagia. This consisted of guiding the participant's hand over her mouth following each attempt to engage in aerophagia. A wristwatch was then correlated with the contingent physical guidance procedure. Responding remained low in the presence of the wristwatch, even after contingent physical guidance was withdrawn.

DESCRIPTORS: aerophagia, contingent physical guidance, mental retardation

Aerophagia is the chronic, repetitive, and excessive swallowing of air (Holburn, 1992). Abdominal distention (a pregnant appearance), excessive flatulence, belching, and pain are common symptoms of aerophagia. Health-related consequences include dizziness, nausea, vomiting, anorexia, constipation, weight loss, and, in extreme cases, death (Barrett, McGonigle, Ackles, & Burkhart, 1987; Holburn, 1986, 1992). Several authors have shown that social influences have little effect on aerophagia (e.g., Barrett et al., 1987; Holburn, 1986; Holburn & Dougher, 1985) suggesting that it is usually maintained by automatic reinforcement.

Many procedures, alone or in combination, have been used to treat aerophagia. These include differential reinforcement of alternative behavior, differential reinforcement of other behavior, reprimands, response cost, time-out, positive-practice overcorrection, squirts of food extract or lemon juice into the mouth, visual screening, auditory cuing, and gentle nose presses. Unfortunately, these procedures have had little effect on responding, or responding returned to pretreatment levels once they were withdrawn (Holburn, 1992). The purpose of the present study was to develop procedures that are effective at both immediately suppressing aerophagia and maintaining the treatment gains.

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METHOD

Participant and Setting

Tracy was a 22-year-old hearing-impaired woman with a diagnosis of profound mental retardation and a 9-year history of aerophagia. She lived with her natural family and attended a privately operated day program. Tracy's verbal repertoire was limited to gestures and a few manual signs. Her aerophagia resulted in severe abdominal distention. Social disapproval had previously been unsuccessful in reducing aerophagia. All sessions, except for the functional analysis (first baseline condition), were conducted in Tracy's bedroom (approximately 5 m by 3 m) in her family's home. The functional analysis

was conducted in a room (approximately 8 m square) at Tracy's day program.

Dependent Measure and Data Collection

Aerophagia was defined as Tracy tilting her head back and opening her mouth. These were the initial links in a chain of responses ending with a large swallow of air. Observers used hand held counters to record each occurrence of aerophagia. A second observer simultaneously but independently scored occurrences of aerophagia during 54% of sessions. The second observer was located outside the room at all times and observed through a small opening in the door. Interobserver agreement, calculated by dividing the lower of the two counts by the higher and multipling by 100%, was 100% for each session. Each session was 10 min in duration, with an average of five sessions conducted per day.

Procedure and Experimental Design

An ABABC reversal design was used to evaluate the effects of contingent physical guidance and stimulus control procedures on aerophagia. A functional analysis using alone, attention, demand, and play conditions (Iwata, Dorsey, Slifer, Bauman, & Richman, 1982/1994) was conducted to determine the variables maintaining aerophagia. During the alone condition, Tracy was placed alone in a room and all aerophagia responses were counted. There were no programmed contingencies for aerophagia. This constituted the first baseline condition. During the contingent physical guidance sessions, Tracy was left alone in her room and was observed through a small opening in the door. Each time Tracy tilted her head back, the first author entered the room and physically placed Tracy's hand over her mouth for 5 s. Tracy's hand was positioned to cover her entire mouth, thereby preventing her from swallowing air. She did not resist any attempt to cover her mouth. The first author left the room immediately after the 5-s physical guidance procedure. A return to baseline was followed by another contingent physical guidance phase.

Procedures similar to those described by Piazza, Hanley, and Fisher (1996) were then employed to conduct the stimulus control training and assessment. Three training sessions were conducted prior to each stimulus control assessment session. Training sessions were designed to establish a wristwatch as a negative discriminative stimulus (S^{Δ}) for aerophagia. Immediately prior to each training session, a wristwatch was placed on Tracy's wrist and her wrist was shaken gently so that she would look at the wristwatch. Otherwise, the training sessions were identical to contingent physical guidance sessions. That is, dependent upon Tracy tilting her head back, the first author entered the room, guided her hand over her mouth for 5 s, and then immediately left the room. After 10 min, the wristwatch was removed and Tracy was given a 1- to 3-min break. This sequence was carried out three times before each stimulus control assessment session. Stimulus control assessment sessions were identical to baseline sessions except for the addition of the wristwatch. In these sessions, there were no programmed contingencies for aerophagia; each aerophagia response was simply counted.

RESULTS AND DISCUSSION

The top panel of Figure 1 depicts the rates of aerophagia during the functional analysis sessions. Responding persisted in all phases, whether or not another person was present. These data indicate that aerophagia was relatively insensitive to the environmental manipulations incorporated in the functional analysis and suggest that responding was maintained by automatic reinforcement. Because responding occurred under all functional analysis conditions, it did not permit

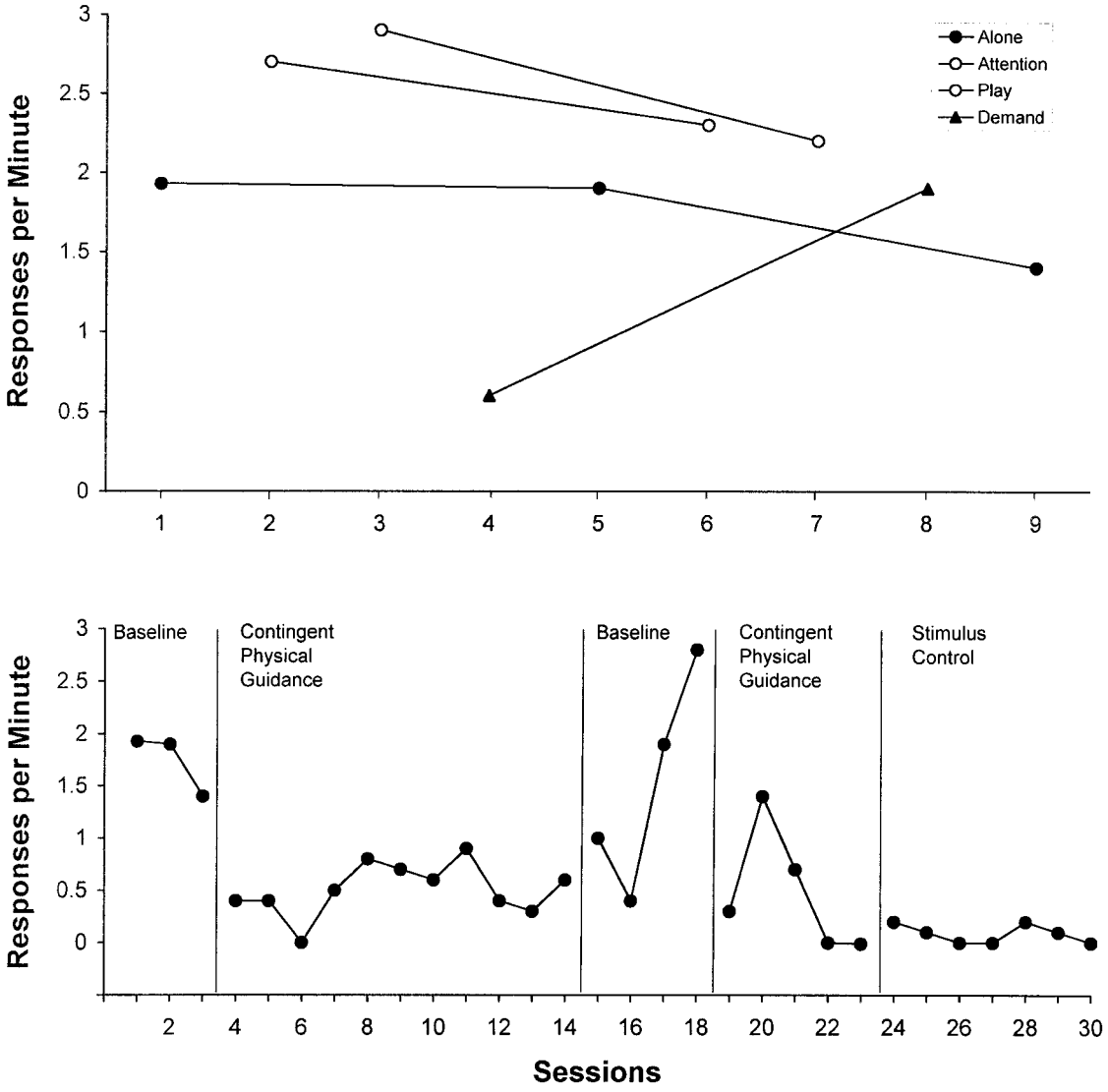

Figure 1. The top panel depicts the number of aerophagia responses per minute during functional analysis sessions. The bottom panel shows the number of aerophagia responses per minute during baseline, contingent physical guidance, and stimulus control assessment sessions.

the selection of a reinforcement-based procedure that was likely to be effective. Consequently, the contingent physical guidance procedure was selected.

The bottom panel of Figure 1 shows the rates of aerophagia during baseline, contingent physical guidance, and stimulus control sessions. Aerophagia was reduced during both contingent physical guidance phases. However, the data are limited in that rates of aerophagia were (a) on a downward trend during the first baseline, (b) on an upward trend during the first treatment phase, and (c) relatively unstable during the return to baseline and return to treatment phases. Aerophagia remained low during the stimulus control assessment phase, even though contingent physical guidance was withdrawn. However, data from the stimulus control assessment should be interpreted

with caution because (a) functional control for the stimulus control procedures was not demonstrated, (b) observations were conducted for only 2 weeks following treatment, and (c) sessions were 10 min in length. Nevertheless, these data are encouraging because in previous studies rates of aerophagia returned to pretreatment levels immediately following withdrawal of treatment.

The behavioral principles underlying the effectiveness of the contingent physical guidance procedure warrant brief discussion. In the present case, aerophagia comprised a chain of responses. The participant tilted her head back, opened her mouth wide, and swallowed air. Covering the participant's mouth as soon as she leaned her head back might have prevented access to the reinforcing effects produced by this response (i.e., response-produced stimulation resulting from swallowing and abdominal distention), and therefore reduced the likelihood of engaging in this response. In this case, contingent physical guidance may be conceptualized as extinction of the initial response in the chain. It is equally plausible that the contingent physical guidance functioned as punishment for the initial response in the chain (tilting head back). That is, placing Tracy's hands over her mouth immediately following head tilting may have served to punish head tilting and subsequent air swallowing. The presence of the wristwatch, which was correlated with the unavailability of reinforcement or with punishment, then may have become an S^{Δ} and suppressed responding in its presence.

Results of the present study suggest that contingent physical guidance and stimulus control procedures are promising tools in treating aerophagia and in maintaining treatment gains in the posttreatment environment. However, this study involved only 1 participant, and thus the generality of the results remains unknown. Future research should address the extent to which the contingent physical guidance and stimulus control procedures are effective for other individuals. Moreover, the durability of response suppression should be investigated further. Of equal importance is assessing the generality of these procedures in other settings. In the present study, treatment sessions were carried out in the participant's bedroom. The participant in the present study emitted a clearly identifiable chain of responses ending with air swallowing. Future research should address the efficacy of using stimulus control procedures with response topographies that are more difficult to detect and measure. Finally, similar stimulus control procedures should be investigated to determine how effective they might be at suppressing aerophagia when combined with other effective treatment procedures.

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